

New subspecies of Papilionidae from South-east Asia (Lepidoptera: Papilionidae)

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Abstract: We describe seven new subspecies of Papilionidae from the islands of Catanduanes (Philippines), Lubang (Philippines) and Karimata (Indonesia). These are: *Pachliopta kotzebuea calataganensis* ssp. n. from Catanduanes, *Arisbe euphrates itim* ssp. n. from Lubang, *Pachliopta strandi noelmohagani* ssp. n. from Lubang, *Arisbe evemon lebar* ssp. n. from Karimata, *Arisbe doson gelap* ssp. n. from Karimata, *Arisbe delessertii furvus* ssp. n. from Karimata and *Menelaides polytes rubeus* ssp. n. from Karimata (holotype ♀; the other holotypes are ♂♂). All holotypes are in the TREADAWAY collection, later designated to Senckenberg-Museum, Frankfurt am Main.

Neue Unterarten von Papilioniden aus Südostasien (Lepidoptera: Papilionidae)

Zusammenfassung: Wir beschreiben sieben neue Papilionidae-Unterarten von den Inseln Catanduanes (Philippinen), Lubang (Philippinen) und Karimata (Indonesien): *Pachliopta kotzebuea calataganensis* ssp. n. aus Catanduanes, *Arisbe euphrates itim* ssp. n. aus Lubang, *Pachliopta strandi noelmohagani* ssp. n. aus Lubang, *Arisbe evemon lebar* ssp. n. aus Karimata, *Arisbe doson gelap* ssp. n. aus Karimata, *Arisbe delessertii furvus* ssp. n. aus Karimata und *Menelaides polytes rubeus* ssp. n. aus Karimata (Holotypus ♀; die übrigen Holotypen sind ♂♂). Die Holotypen der neuen Taxa sind in der Sammlung TREADAWAY und werden später im Senckenberg-Museum, Frankfurt am Main, deponiert.

Introduction

We describe herein a number of new subspecies of Papilionidae from Karimata Island, Indonesia, which lies south-west of Borneo, from Catanduanes Island, Philippines, which lies east of Luzon and from Lubang Island, Philippines, which lies north of Mindoro and west of Luzon.

The butterfly fauna of Karimata Island has not been investigated in great detail. Several collecting trips were made during the late 1980s and early 1990s. HANAFUSA (1992) published a list of the butterflies and described several new subspecies. We have recently received additional material from Karimata Island that indicate that other new subspecies exist there. Catanduanes Island has been explored several times but it appears that the special features of the *Pachliopta kotzebuea* populating that island have been overlooked. PAGE & TREADAWAY (2003a, b, 2004) did not include Catanduanes in the distribution of *Pachliopta kotzebuea*. We have not been able to find any previous record of collections made on Lubang Island and we therefore add here a short list of the species of Papilionidae we have recorded so far, in

addition to describing a new subspecies of *Pachliopta strandi* that we have found on that island. The systematic taxonomy used here follows that of PAGE & TREADAWAY (2003a, b, 2004).

Descriptions

Arisbe evemon lebar ssp. n.

Holotype ♂: Indonesia, Karimata Island, iv. 1989 (Fig. 1).

Paratypes (in total 7 ♂♂): 3 ♂♂ Karimata Is., iv. 1989, in coll. TREADAWAY. 4 ♂♂, Karimata Is., iv. 1989, xi. 2009, in coll. PAGE.

Etymology: This subspecies is named for its relatively large size and broad forewings. Bahasa Indonesia: LEBAR — adjective for something wide or broad.

Holotype ♂. Forewing length 35 mm. Larger than specimens from Sumatra or Borneo. The forewing distal margin not so concave as in either and the forewing tip more rounded, thus giving a broader appearance. The submarginal blue-green spots are relatively small but the main discal band is similar in size to that of specimens from Sumatra or Borneo. In colour, however, the discal band of spots on both wings is markedly duller than in specimens from Sumatra or Borneo, with a greyish cast. The paratypes are very similar. — ♀ unknown.

Arisbe doson gelap ssp. n.

Holotype ♂: Indonesia, Karimata Island, iv. 1989 (Fig. 2).

Paratypes: 5 ♂♂, Karimata Is., xi. 2009, in coll. PAGE.

Etymology: This subspecies is named for its dark appearance compared to other subspecies. Bahasa Indonesia: adjective GELAP, meaning dark.

Holotype ♂. Forewing length 35 mm. On the upperside, the submarginal blue-green spots are relatively small, especially on the hindwing. The spots of the discal band on the forewing are smaller and separated by broader black areas along the veins. In colour, the discal band of spots on both wings is markedly duller than in specimens from Sumatra or Borneo, with a pronounced greyish cast. The paratypes are very similar. — ♀ unknown.

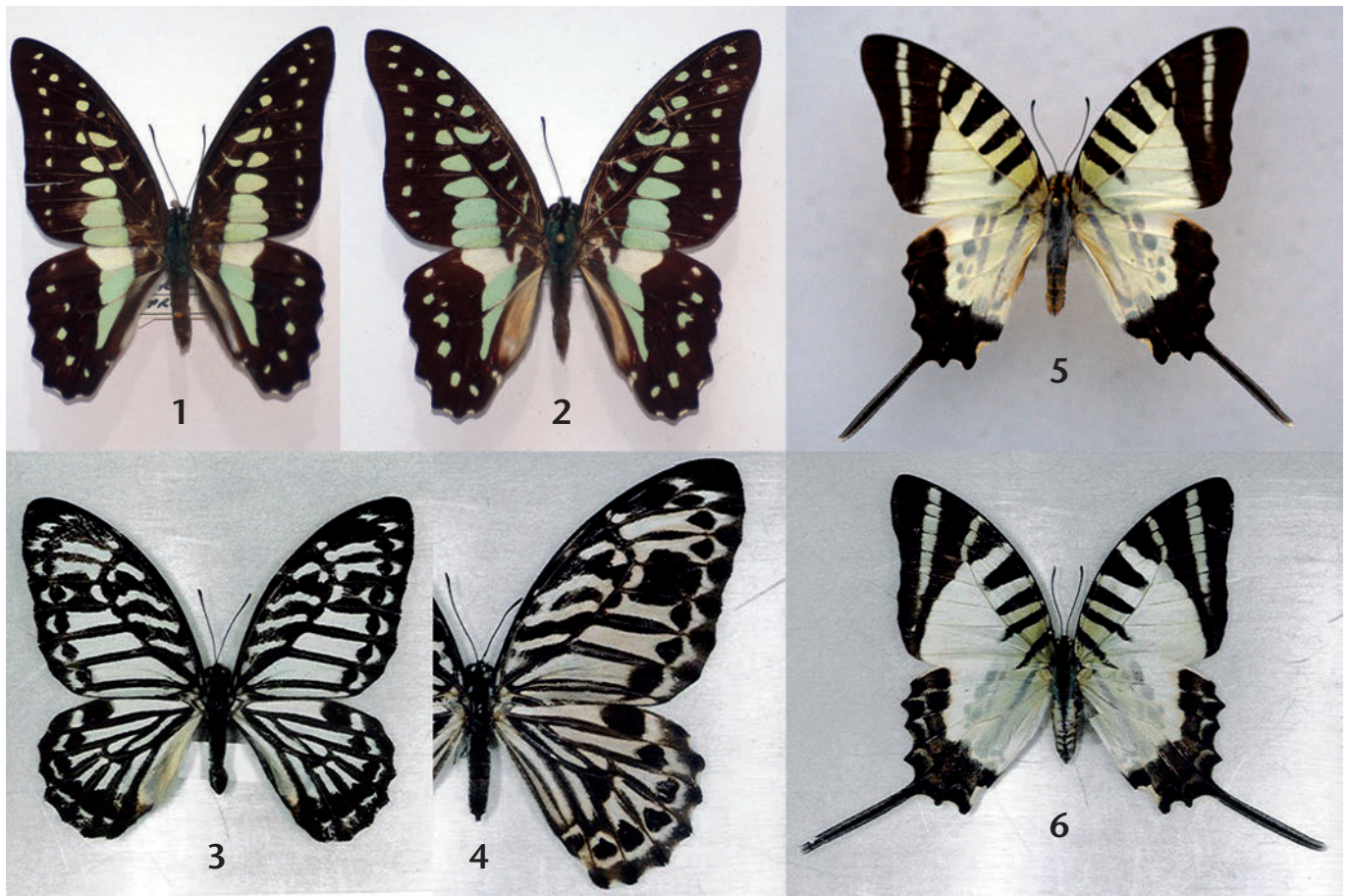
Arisbe delessertii furvus ssp. n.

Holotype ♂: Indonesia, Karimata Is., iv. 1989 (Fig. 3).

Paratypes (in total 3 ♂♂, 1 ♀ [“allotype”]): 1 ♀, Karimata Is., ix. 1988 (Fig. 4), in coll. TREADAWAY. 3 ♂♂ Karimata Is., xi. 2009, in coll. PAGE.

Etymology: This subspecies is named for its dark colour and accentuated black markings. Latin adjective FURVUS, meaning dark coloured or black.

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Figs. 1–14: Subspecies of Papilionidae specimens. — Fig. 1: *Arisbe evemon lebar* ssp. n., HT ♂, fwl. 35 mm, Karimata Is. — Fig. 2: *Arisbe doson gelap* ssp. n., HT ♂, fwl. 35 mm, Karimata Is. — Figs. 3–4: *Arisbe delessertii furvus* ssp. n., Karimata Is. Fig. 3: HT ♂, fwl. 39 mm. Fig. 4: PT (“AT”) ♀. — Figs. 5–6: *Arisbe euphrate itim* ssp. n., Lubang Is. Fig. 5: HT ♂, fwl. 39 mm. Fig. 6: PT ♀ (“AT”), fwl. 36 mm. — Figs. 7–10: *Menelaides polytes rubeus* ssp. n., Karimata Is. Fig. 7: HT ♀, fwl. 50 mm. Fig. 8: PT ♂ (“AT”). Fig. 9: PT ♂. Fig. 10: PT ♂. — Figs. 11–12: *Pachliopta strandi noelmohagani* ssp. n., Lubang Is. Fig. 11: HT ♂, fwl. 41 mm. Fig. 12: PT ♀ (“AT”), fwl. 54 mm. — Figs. 13–14: *Pachliopta kotzebuea calataganensis* ssp. n., Catanduanes Is. Fig. 13: HT ♂, fwl. 45 mm. Fig. 14: PT ♀ (“AT”), fwl. 49 mm. — Photos M. G. P. PAGE; specimens not to the same scale.

Holotype ♂. Forewing length 39 mm. Head black with white spots. Thorax and abdomen black with greyish lateral stripes. Pale areas of the upperside of both wings pale blue-grey that has a yellowish tinge. Black markings heavy. On the forewing, the submarginal black spots are confluent with the black shading running along the veins, thus separating a row of light lunules in the marginal black band. The pale markings on the costa are reduced to small streaks and the postdiscal streak in cell R_3 is absent. On the hindwing, the submarginal black spots are also enlarged and are also confluent with the black markings running along the veins. The yellow spot in the anal tornus of the hindwing is very small. The black markings are also extensive on the underside of both wings. The four spots lying close to the discal veins in cells R_3 to M_2 are very conspicuous.

The ♂ paratypes agree well with the holotype. Compared to specimens from neighbouring populations of *delessertii* (GUÉRIN-MÉNEVILLE, 1839), this subspecies is readily separated by the heavy black markings, the absence of the postdiscal streak in cell R_3 of the forewing and the great reduction in the yellow spot at the hindwing anal tornus. The light areas are a similar colour to those of subspecies *sacerdotalis* FRUHSTORFER, 1909 from Sumatra but are duller grey and are darker than those of typical

specimens of subspecies *catoris* GROSE-SMITH, 1892. The ♀ “allotype” also differs in the heavy black markings and the absence of the postdiscal streak in cell R_3 of the forewing. The postdiscal double black spot on M_1 and M_2 is fused with the submarginal black spot in cell M_2 .

Arisbe euphrates itim ssp. n.

Holotype ♂: Philippines, Lubang Island, near Vigo, II. 2009 (Fig. 5), ex coll. PAGE, in coll. TREADAWAY.

Paratypes (in total 23 ♂♂, 6 ♀♀): 1 ♀ [“allotype”], Lubang Island, near Vigo, IV. 2008 (Fig. 6), in coll. TREADAWAY. 23 ♂♂, 5 ♀♀, Lubang Is., in coll. PAGE.

Etymology: This subspecies is named for the intense black markings of the upperside. Tagalog adjective *ITIM*, meaning black.

Holotype ♂. Forewing length 39 mm. In general facies similar to the dark form of *Arisbe euphrates euphrates* (FELDER & FELDER, 1862), however the black markings are much more intense. Whereas *Arisbe euphrates euphrates* always has a scattering of white scales within the black submarginal band of the hindwing, giving it a greyish appearance, this is not the case with *Arisbe euphrates itim*. Apart from traces of white submarginal lunules in cells M_1 , M_2 and M_3 , the band is uniformly black. On the forewing, the bands are all well marked and there is a black suffusion spreading from the proximal margin of



the submarginal band in cells CuA_1 and CuA_2 , which is not observed in *Arisbe euphrates euphrates*. The paratype ♂♂ agree well with the holotype.

“Allotype” ♀. Forewing length 36 mm. Not as dark as the ♂ but nevertheless darker than ♀♀ of *Arisbe euphrates euphrates* from Luzon. The black submarginal band of the hindwing is broader than in *Arisbe euphrates euphrates*.

***Menelaides polytes rubeus* ssp. n.**

Holotype ♀: Indonesia, Karimata Island, iv. 1989 (Fig. 7), in coll. TREADAWAY.

Paratypes (in total 5 ♂♂, 1 ♀): 1 ♂ [“allotype”] (Fig. 8), 2 ♂♂, 1 ♀, Karimata Is., iv. 1989, in coll. TREADAWAY. 2 ♂♂, Karimata Is., xi. 2009, in coll. PAGE.

Etymology: This subspecies is named for the extensive red markings on the hindwings of the ♀♀. Latin adjective RUBEUS, meaning red or reddish.

Holotype ♀. Forewing length 50 mm. Intermediate in general between *M. polytes romulus* (CRAMER, 1775) ♀-form *polytes* from the Malay Peninsula and *M. polytes valeria* (JORDAN, 1909) from Sarawak, however the lighter rays of the forewing upperside occupy a greater portion of the wing area than in *M. polytes romulus* ♀-form *polytes* and the red discal spots on the hindwing are more extensive than in *M. polytes valeria*. The white postdiscal spots in cells M_2 and M_3 of the hindwing are small, compared to those of typical specimens of *M. polytes romulus* ♀-form *polytes*, and in cell M_3 significantly replaced by red. The spot in cell CuA_1 is wholly red and that in CuA_2 is large, extending further towards the base of the wing than observed for typical specimens of *M. polytes romulus* ♀-form *polytes*. The submarginal spots are all red and are large compared to *M. polytes valeria*.

The ♂♂ are intermediate between those of *M. polytes romulus* from the Malay Peninsula and those of *M. polytes theseus* (CRAMER, 1777) from Borneo. Two ♂♂ from our series of specimens (Figs 9, 10) have long tails, as usual for *M. polytes romulus* and *M. polytes valeria*. The other specimens including the “allotype” (Fig. 8) have short tails more typical of *M. polytes theseus* from Borneo. However, such short-tailed specimens can also be found among *M. polytes romulus*. The ♂ and ♀ genitalia (not shown) are similar to those of *M. polytes romulus* and quite distinct from those of *M. polytes theseus*; see PAGE & TREADAWAY (2004) for illustrations of the genitalia of the latter two subspecies.

***Pachliopta strandi noelmohagani* ssp. n.**

Holotype ♂: Philippines, Lubang Island, near Vigo, iv. 2008 (Fig. 11).

Paratypes (in total 12 ♂♂, 9 ♀♀): 1 ♀ “allotype”, Lubang Island, near Vigo, iv. 2008, in coll. TREADAWAY (Fig. 12). 6 ♂♂ (fwl. 41–52 mm), iv. 2008, 2 ♀♀ (fwl. 46 mm), iv. 2008, in coll. TREADAWAY. — 3 ♂♂ (fwl. 40–51 mm), iv. 2008, 3 ♂♂ (fwl. 45–53 mm) ii. 2009, 2 ♀♀ (fwl. 46, 48 mm) iv. 2008, 3 ♀♀ (fwl. 45–51 mm) ii. 2009, 1 ♀ (fwl. 50 mm) ii. 2010, in coll. PAGE. All were collected near Vigo, Lubang Is.

Etymology: This subspecies is named after Noel MOHAGAN, in gratitude for his assistance in our studies of the butterflies of the Philippine Islands.

Holotype ♂. Forewing length 41 mm. Thorax and abdomen black with patches of yellow. Upperside ground colour of all wings black. Forewing uppersides with white rays in the discal region. The discal cell is mostly greyish white and has four black streaks running its length. On the hindwing uppersides, there is a submarginal series of pale yellow spots, each suffused with black scaling, and a clear white patch filling the greater part of the discal cell and present in each of the cells between vein Rs and the anal margin of the wing. The white patch in the discal cell is lightly marked with two black streaks running the length of the cell. The underside is similar to the upperside. The light rays of the forewings are more grey than those on the upperside. On the hindwings, the yellow submarginal spots are scarcely suffused with black scaling.

“Allotype” ♀. Forewing length 54 mm. Similar to the ♂ holotype but larger and with broader forewings that are more rounded at the apex. The hindwing has broader, more spatulate tails. The yellow submarginal spots are larger than those of the ♂. The whitish discal patch of the hindwing upperside is duller than in the ♂.

Compared to the other subspecies of *P. strandi* BRYK, 1930 that have yellow forms (*P. s. strandi* BRYK, 1930 from Mindoro and *P. s. marinduquensis* PAGE & TREADAWAY, 1997 from Marinduque), this subspecies is very brightly marked. The white rays on the forewing uppersides are more extensive and the yellow colour on the body and wings is more intense than found with either of the other subspecies. The discal white patch on the hindwing uppersides is a more obvious white than in *P. s. strandi*. All our specimens have two black streaks in this patch, unlike *P. s. marinduquensis*, which has these only weakly represented, if at all.

***Pachliopta kotzebuea calataganensis* ssp. n.**

Holotype ♂: Philippines, Catanduanes Island, Calatagan, 18.–25. vi. 2008 (Fig. 13).

Paratypes (in total 35 ♂♂, 9 ♀♀): 1 ♀ “allotype”, Catanduanes Is., 18.–25. vi. 2008 (Fig. 14), ex coll. PAGE, in coll. TREADAWAY. 35 ♂♂ (fwl. 41–49 mm), 8 ♀♀ (fwl. 40–52 mm) Catanduanes Is., Calatagan, 18.–25. vi. 2008, in coll. PAGE.

Etymology: This subspecies is named after the type locality near Calatagan, Catanduanes Island. The name is herewith defined as being a noun in apposition.

Holotype ♂. Forewing length 45 mm. The ground colour of the upperside of all wings intense black with a glossy sheen. Forewings with a few, sparsely marked rays in the postdiscal region. On the hindwings, there are three heavily suffused red spots, at the anal tornus and in the neighbouring two cells. The underside ground colour is also intense black, but without the glossy sheen. On the forewing undersides, there is a postdiscal patch of white, mostly concentrated along the veins. On the hindwing undersides there is a complete row of red submarginal spots and a postdiscal row of spots in cells CuA_2 , CuA_1 , M_3 and M_2 .

There is considerable variation among the ♂♂ in the development of the white rays on the forewing underside. Most have a pattern similar to that of the HT but 3 have a more extensive pattern that covers the entire postdiscal region. About half of the ♂♂ have a postdiscal band of 4 red spots, as does the HT, although the spot in M_2 is frequently reduced in size. In most of the others there are 3 well-developed spots in CuA_2 to M_3 . Eleven of the ♂♂ have the spots in M_2 and M_3 suffused with white, which is rarely observed in the other subspecies of *Pachliopta kotzebuea* (ESCHSCHOLTZ, 1821) from the north of the Philippines. This subspecies differs from *P. k. mataconga* PAGE & TREADAWAY, 1995 from the adjacent part of southern Luzon, in having well marked postdiscal rays on the forewing upper- and undersides and in the well-developed red, or white, spots in the postdiscal band on the hindwing underside.

“Allotype” ♂. Forewing length 49 mm. Similar to the ♂ holotype but slightly larger and with broader forewings that are more rounded apically. The red submarginal spots on the hindwing uppersides are more strongly marked than in the ♂ holotype.

List of Papilionidae collected on Lubang Island (2008–2010)

Graphium agamenon agamemnon (LINNAEUS, 1758)

Graphium sarpedon sarpedon (LINNAEUS, 1758)

Arisbe eurypylus gordion (FELDER & FELDER, 1864)

Arisbe euphrates itim ssp. n.

Pachliopta strandi noelmohagani ssp. n.

Chilasa clytia palephates (WESTWOOD, 1845)

Achillides palinurus daedalus (FELDER & FELDER, 1861)

Papilio demoleus libanius FRUHSTORFER, 1908

Menelaides deiphobus rumanzovia (ESCHSCHOLTZ, 1821)

Menelaides polytes ledebouria (ESCHSCHOLTZ, 1821)

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